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UNIVERSITY OF ALBERTA

MANAGEMENT OF QUALITY TRAINING IN ORGANIZATIONS

by

MELANIE HOPE MOORE

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

in

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Management of Quality Training in Organizations" submitted by Melanie Hope Moore in partial fulfilment of the requirements for the degree of Master of Education.

A K Deane

Professor Arthur Deane

Dr. David Collett

Dr. Paul Larson

Date: September 3, 1992

Dedication

This thesis is dedicated to my son, Leigh Thomas Gendron.
It is my hope that the process of continuous/quality improvement
now being adopted by many of our work and educational organizations
will result in increased opportunities for him and his peers
to utilize the vast stores of energy and creativity they possess.
I have felt great joy watching him learn and grow,
and observing his increasing ability to solve problems.
In him, as in all people, are the seeds of unlimited and great discoveries.
I challenge organizations to nourish and nurture these seeds
by providing environments that encourage all individuals
to contribute to their potential.

ABSTRACT

The purpose of this study was to ascertain how organizations in the Edmonton, Alberta area, which are in the process of adopting a quality improvement process such as Total Quality Management, are managing formal quality training activities. A questionnaire was developed to investigate patterns in three areas: the characteristics of the organizations; the content of the quality training activities; and, the process used for the management or administration of these activities. The instrument was sent to the person responsible for coordination of formal quality training activities in 29 organizations in the Edmonton area. Twenty-three were returned for a response rate of 79%. The results indicate that a quality improvement process, accompanied by the provision of relevant education to all levels of employees, is being adopted by several large business organizations, and by some large not-for-profit and government organizations. The results provide support for the use of a model based on the work of Jablonski (1990), for the development of a quality training program that integrates five basic content categories with an educational planning process derived from several models of training or curriculum development. Recommendations are directed to the coordinators of formal quality training, first, for

the development of the content and, second, for the management of five components of quality training: needs assessment, curriculum development, delivery of training, audience for the training, and evaluation approaches. In addition, recommendations are made for further research involving partnership of the education and workplace communities in the development and evaluation of tools and processes to facilitate organizational learning in quality improvement deployment.

ACKNOWLEDGEMENTS

I have discovered that the greatest pleasure in completing a thesis is the opportunity to formally thank those who have learned along with me, and who have supported me. My gratitude goes to those who contributed their expertise toward the development and completion of this study. I would like to thank the participants in this study who, by giving generously of their time in completing the questionnaire, epitomize the concept of "quality." I hope this study will help them in their quest for continuous improvement. For the timely construction and professional layout of the questionnaire, I thank Yvonne Purvis-Spanton. Her skills on the MacIntosh are exceptional.

Since July of 1991, I have worked closely with Professor Art Deane, my thesis supervisor, and I wish to thank him for his interest in my research and the encouragement and empathetic support that he has provided through many hours of planning and discussion. I also thank him for the numerous valuable contacts he has shared with me. To Dr. Dave Collett, I would also like to extend my gratitude. His wisdom and remarkable ability to focus on the essence of an issue contributed much to my thesis. I thank Paul Larson from the Faculty of Business

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With love and gratitude, I thank my husband Jim, whose patience, faith and support over the past two years have fuelled my efforts to finish this degree, and whose interest in my studies has increased the range of our many enthusiastic discussions.

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CHAPTER I

PURPOSE OF RESEARCH

Introduction

Many North American organizations are adopting comprehensive quality improvement strategies in response to the need to become more competitive, effective and efficient. Quality control efforts in organizations were traditionally handled by a small group of specialists, usually engineers, who employed statistical techniques to monitor product quality and to develop recommendations for improvement. Since the 1980s, there has been a surge of interest in an approach pioneered after the Second World War by W.E. Deming in Japan (Walton, 1988). Labelled Total Quality Management (TQM), this approach differs from the traditional approach to quality control in that all staff -- executive, management and line employees -- are involved in the quality improvement efforts.

The implementation of Total Quality Management is a huge undertaking for an organization. Available guidelines (Berry, 1991; Jablonski, 1990; Gryna, 1988) stress the importance of, first, restructuring the organization into quality improvement teams. Training which is then provided for all employees focuses on developing the attitudes, knowledge and skills necessary

for these employees to function as part of a quality improvement team. Berry (1991), Jablonski (1990) and Gryna (1988) describe formal courses as being the major strategy for quality improvement development in an organization.

Jablonski (1990) emphasizes that when making a large investment in formal quality training activities, a company should make a point of knowing whether such training is meeting the organization's needs. The formal training sessions may be the employee's first exposure to quality improvement principles; how well these activities are developed and delivered will determine how much resistance to the change will occur. Well developed and delivered courses will facilitate acceptance and application of the concepts of quality improvement, whereas poor ones will amplify the natural resistance to change within an organization.

In the Edmonton area, as in other urban and industrial centres, there has been a trend for the adoption of a quality improvement process in a variety of profit, not-for-profit and government organizations. Due to the diversity within and among organizations, wide variety exists in how this process is administered and implemented. Since the provision of formal training is a major strategy in the implementation of a quality improvement process, the study of how this training is actually being developed and administered is important.

Fishman (1990) states that "if training is to yield excellent results, it must also adhere to quality process techniques" (p. 27). Fishman's description of the importance of developing a training system includes the following sequential processes and sub-processes: defining training needs; linking training to business objectives and strategies; assessing cost-effectiveness; analyzing audiences; defining objectives; creating curriculum and course materials; and evaluating results.

To date, the majority of research completed on Total Quality Management has consisted of case studies describing successes in individual organizations (Farquhar & Johnson, 1990; Schein & Berman, 1988). Although these studies emphasize the importance of providing training for all employees, their description of approaches to the training are limited. Studies investigating how the training for quality improvement is being administered, or comparing the administration to the ideal as described by authors such as Jablonski (1990), Berry (1991) and Gryna (1988) are also limited.

The purpose of this study is to describe how formal quality training activities are being managed in Edmonton-area organizations involved in quality improvement, and to compare actual practice with the recommended approaches.

Question

This study was guided by the following research question: How are organizations, in the Edmonton, Alberta area, which are in the process of adopting a quality improvement process such as Total Quality Management, managing formal quality training activities?

Sub-Questions

The specific questions used in guiding the development of the methodology for the study were as follows:

1. What types of organizations are offering formal quality training activities in the Edmonton area?
2. Who is responsible for coordination/administration of formal quality training activities in these organizations?
3. When were the formal quality training activities initiated?
4. What formal quality training activities are being offered or planned by these organizations?
5. How are the formal quality training activities being managed? This sub-question was further divided into five components: (a) How is the need for specific formal quality training activities determined? (b) Who develops the curriculum and training materials for the formal quality training activities? (c) Who

delivers (leads, facilitates) the formal quality training activities? (d) Who receives the formal quality training? and, (e) How are the formal quality training activities evaluated?

Definitions of Terms

Key terms important to the development of the study are defined below.

Quality Improvement. If "quality" refers to those attributes of a product or service to which a customer attached value, then "quality improvement" refers to the processes used to meet or exceed the customer's expectations (Jablonski, 1990).

Total Quality Management (TQM). The term "Total Quality Management" refers to the process used to build a total customer-focused management system and supporting culture that has, as its driving force, a mandate of meeting customers' needs the first time and every time. It involves employees at all levels in the assessment and improvement of quality through the application of statistical process control (SPC) and other quality improvement (QI) tools and techniques. Synonymous terms include "continuous improvement process," "quality improvement process," "total quality control" (Berry, 1991).

Organization. For the purposes of this study, the term "organization" refers to a group of five or more people working toward a common goal, such as the

development of a product or service for consumption by a customer or client. The organization may be a private business company, a not-for-profit organization, or a government department or agency, such as a health care facility.

Formal Training Activity. The term "formal training activity" refers to institutionally sponsored, classroom-based learning. Synonymous terms include "course" and "workshop" (Marsick & Watkins, 1990).

Formal Quality Training Activity. In this study, "formal quality training activity" refers to institutionally sponsored, classroom-based learning, focused on some aspect of quality improvement implementation. These activities may occur in one of five major areas adapted from the quality training model developed by Jablonski (1990): (a) awareness; (b) orientation; (c) quality improvement process; (d) data gathering and analysis; and (e) team building.

Edmonton Area. The organizations in this study will be located either within the City of Edmonton or within 50 kilometres of the official City boundaries.

Delimitations of the Study

The following delimitations defined the scope of the investigation:

1. This study explored the management of "formal" quality training activities, specifically classroom-based workshops and courses. Informal or on-the-job learning activities were not explored.
2. This study did not explore the management of other formal training activities present in the organizations, only those involving quality improvement.
3. This study did not evaluate the formal quality training activities under investigation; it described how the identified activities are being managed.
4. This study was limited to a survey of organizations in the Edmonton area.

Limitations of the Study

There were two primary limitations to the study:

1. This study was limited to a broad overview of the quality training activities in the organizations surveyed, and did not provide an in-depth examination of specific approaches to the development of the training content and processes.
2. This study was limited to a description of the management of formal quality training activities, which constitutes a limited part of the quality improvement process. The influence of other organizational strategies or processes, such as informal learning, performance management systems,

work redesign, etc., on the development of the formal quality training activities was not examined.

Structure of the Study

Chapter I introduced and defined the research questions and sub-questions. The limitations and definitions that determined the scope of the study were described.

The remainder of this study is organized as follows: Chapter II describes related literature; Chapter III describes the research methodology used to answer the research questions; Chapter IV contains research findings; Chapter V develops conclusions based on the summary of findings; and the recommendations arising from the results are presented in Chapter VI.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

In order to provide context for the study, this review explores three areas of relevant literature. First, the development of quality improvement in organizations is traced from early quality control efforts in industrialized society to the pioneering work done by W.E. Deming in developing Total Quality Management (TQM). The characteristics of organizations that have adopted a quality improvement process and the principles that guide current TQM philosophy and practice in these organizations are discussed. Second, two models of implementation are presented and recommendations regarding the content and process of the formal training activities accompanying a quality improvement strategy are discussed. Third, literature is reviewed which explores in depth the management of training in the implementation of a quality improvement process. Throughout this chapter, the relationship of the literature to the present study is described.

Development of the Quality Improvement Process in Organizations

"Quality" is typically defined as "those product features which meet the needs of customers" (Juran & Gryna, 1988). Until the 1700s, the manufacturing of products and services tended to be on a small scale (i.e. small businesses, single-family farms). Quality was easy to control under these circumstances because the producer had direct contact with the customer. Miller (Miller & Howard, 1991) refers to this time in history as the "era of craft production," stating that this era was characterized by lack of efficiency in production.

The Industrial Revolution in the late 1800s spawned a larger scale of production, which Miller (Miller & Howard, 1991) refers to as the "mass production era." A scientific management philosophy emerged in the early 1900s, with the premise that any operation could be improved by breaking it down into components, measuring the work content, and seeking ways to improve work methods. This resulted in the creation of "quality control" specialists who were located in the middle-level production departments in manufacturing businesses. These specialists were usually engineers who used statistical techniques to guide quality control efforts (Krajewski & Ritzman, 1987). The approach was limited, excluding both top management and line employees from the quality improvement planning efforts. This corresponded to an

overall trend toward specialization and simplification during the mass production era, which Miller maintains reduced the importance of the individual and resulted in a wide-spread worker dissatisfaction.

During the late 1940s and into the 1950s, W.E. Deming, an American statistician, pioneered an approach in post-war Japan which involved a more comprehensive system of continuous business improvement. The adoption of this approach has propelled Japan to the enviable position of being a world leader in quality (Aquayo, 1991). Now referred to as Total Quality Management (TQM), this approach involves all levels of employees in quality improvement efforts. Employees in a TQM system work in teams and participate in decision making. Because TQM implementation involves a shift away from a hierarchical organizational structure, Deming (1988) describes why a top-level commitment by corporate managers to implement the TQM philosophy and approach is essential. This is most often reflected in the development of a strategic plan used to guide the quality improvement process.

Miller (Miller & Howard, 1991) refers to the Total Quality Management trend as a third production era, based on a recognition of the benefits and deficiencies of each of the two previous systems. From the first era -- craft production -- comes an understanding of the essential nature of the team, and from the second era -- mass production -- comes a focus on quality and efficiency.

The marriage of the two creates a new system that requires new assumptions about decision making and responsibility. The development of a TQM organization is based on the belief that work is best performed, decisions are best made, and problems are best solved when people work in teams. Transition to a participatory, team-based organizational structure requires the development of new skills, attitudes and behaviours on the part of both managers and employees.

Faced with increasing global competition, worker dissatisfaction, and rapid technological advancement, American business has recognized that it must change in order to survive. The TQM philosophy and approaches practised extensively in Japan have been gaining popularity in business in North America since the early 1980s. American business gurus Tom Peters (1982) and Phil Crosby (1984) have been challenging organizations to develop a customer orientation involving organization-wide commitment and change. Phil Crosby's Quality College in Florida offers for organizations an extensive quality curriculum geared to catalyze organizational change.

The fact that many organizations have developed a quality improvement process is reflected in the publication of case studies that describe several TQM success stories in the United States (Schein & Berman, 1988) and Canada (Farquhar & Johnston, 1990). Clearly, TQM is a dominant trend in organizational development

which will continue to gain momentum in the 1990s. The American Society of Training and Development (ASTD) recently surveyed 400 senior human resources executives from among the Fortune 500 and some of the country's largest privately held corporations. Three quarters of the companies reported quality improvement to be a major strategic goal; another 17% reported that although quality was not a formal goal, interest in it was increasing (Lee, 1991).

The increasing numbers of case studies of companies that have mastered the transition to TQM have contributed to the development of a guiding set of principles (Schein, 1988). Total Quality Management requires the following:

1. Customer focus, the aim of which is to ensure that the needs and expectations of every internal and external client are fully met.
2. Long-term management commitment to Total Quality Management.
3. Involvement of all employees in improving processes and systems, with an emphasis on reducing and eliminating waste.

Review of the case study data reveals certain trends among the organizations that have adopted a comprehensive quality improvement process. They are typically large business (profit) organizations who have developed a strategic plan to guide the process, and the

process has been initiated recently (i.e. in the 1980s). All the companies have developed an employee-wide educational program as a major strategy. In order to draw comparisons to this case study literature, the present study explored trends in the following demographic characteristics for the organizations surveyed: status (profit, not-for-profit, government), size, presence of strategic plan, and time of initiation of quality improvement process.

The difficulty in drawing comparisons among organizations is that each uses a unique set of terms and vocabulary to describe their approach to quality improvement. In the present study, key or common themes have been identified for the content and process of formal quality training, based primarily on two implementation models (Jablonski, 1990; Berry, 1989), and a framework developed for comparing approaches among organizations. These two models are described in the following section.

Content of Quality Training

For large, traditionally structured organizations, the transition to Total Quality Management requires extensive organizational change. Ideally, it begins with long-term strategic planning. Jablonski (1990) and Berry (1991) have developed planning strategies to guide organizational conversion to TQM. These approaches are based on their personal experiences as business management

consultants and reflect the "state of the art" in implementation. The models described by Jablonski and Berry are discussed in depth in this section in order to provide an understanding of what training activities (content) are required, and how and when these should be delivered in a quality improvement process.

Berry (1991) describes three phases in the TQM transformation. In Phase One, the structural framework of a "quality organization" is put in place. A Quality Council is formed consisting of top management who have the responsibility to study Total Quality Management, assess corporate culture, attitudes of employees and requirements of the customers. In essence, the Quality council assesses the need for TQM within the organization. If the Quality Council decides to go forth with TQM, it creates a mission statement with goals and objectives to guide the transition, taking six to twelve months. This important initial phase lays the groundwork for the TQM implementation. Berry states that it is important to be proactive in this phase, to anticipate the possible barriers to successful transition of TQM, and to develop contingencies to deal with resistance to change.

In Phase Two of Berry's model, quality divisions are created which consist of teams responsible for developing quality policy and processes. He recommends that the training for quality teams be structured in three modules: the first consists of an overview of quality

improvement, including underlying concepts and beliefs; the second covers data gathering and analysis; and the third module develops analysis, problem solving and planning skills. Once the Pilot site demonstrates success with the new approach, these team members can become internal consultants to other divisions as they develop their own quality teams.

In Phase Three, a permanent TQM structure is in place in the organization, with quality teams throughout all the divisions. Berry stresses the importance of training for employees at all levels throughout the three phases. By Phase Three, the training is a continuous and ongoing process. Although Berry provides a short list of possible training activities, he does not provide a detailed discussion of the sequence of content.

Berry discusses the resistance to organizational change in each of the three phases and the implications for the quality leaders. In Phases One and Two, he indicates that there is a lot of internal resistance to the change, and that management needs to model the TQM approach to facilitate acceptance. In particular, Berry stresses that the structure of training be made very practical and result in action so that the quality teams can see the effects quickly. By Phase Three, the success has been demonstrated in at least one site, and probably several, and the employees realize that the change is

permanent. Attaining this phase could take several years, especially in a large, complex organization.

Jablonski (1990) has developed a five-phase process based on his experience in facilitating the implementation of TQM in several public and private organizations. These phases are: (a) Phase 0- Preparation; (b) Phase 1 - Planning; (c) Phase 2- Assessment; (d) Phase 3 - Implementation; and, (e) Phase 4 - Diversification. With the exception of Phase 0, all the phases evolve over time and are continuous and overlapping. Jablonski's process is much more detailed than Berry's, and the steps within each phase are carefully described.

Phase 0 - Preparation is similar to Berry's Phase One, wherein the executives in a company make a decision to implement TQM following an Awareness Workshop, after which they develop a vision statement, corporate goals, and policy. The difference from Berry's approach is that a definite decision to proceed with TQM is made at this point, and the strategic planning is begun. Phase One for Berry is still tentative and exploratory, with implementation being dependent on the results of a test site.

In Phase 1 - Planning, a TQM Council is set up, with a Coordinator responsible for the implementation. The Coordinator consults directly with the executives of the company. In this phase, as in Phase 0, training is

provided to the TQM council members before they begin to develop the implementation plan. This phase facilitates the transformation of the existing organizational hierarchy into a renewed structure with three major elements: (a) The Corporate Council; (b) Process Action Themes (PATs); and (c) Support Services. Jablonski, like Berry, discusses some organizational change issues which may be encountered at this phase and he provides some recommendations concerning how these barriers may be overcome.

In Phase 2 - Assessment, Jablonski describes how the organization undergoes a comprehensive needs analysis phase, in which the requirements of both internal and external customers are determined by the TQM Coordinator. This involves four primary measurements: (a) self-evaluation of the needs of employees, and working units; (b) organizational assessment; (c) customer surveys; and (d) training feedback. Jablonski stresses the importance of getting training feedback at this point because training comprises a large part of the TQM budget. According to Jablonski, "obtaining surveys from each training session should be routine, with the results being compiled and summarized by the training department and reviewed by both the training department representative and the TQM Coordinator" (p. 94). He stresses that the goals of training must be measurable and recommends the use of a four-level evaluation process:

1. Reaction - were the trainees satisfied with the program?
2. Learning - what facts, techniques, skills or attitudes did the trainees understand and absorb?
3. Behaviour - did the program change the trainee's behaviour in a way that improves on-the-job performance?
4. Business results - did the program produce the desired results? (p. 96)

In Jablonski's Phases 0, 1 and 2, the TQM program has been planned and the initial efforts evaluated. These processes are included in Berry's Phase One.

In Phase 3 - Implementation, Jablonski describes how the implementation process is put in place. The organization facilitators are selected and trained, a TQM library established, and training provided for all managers and employees in order to develop Process Action Teams (PATs). The first success story should emerge from Phase 3 and will fuel the process. This phase is similar to Berry's Phase Two, in which an extensive training program is put in place to support the development of functioning teams in the organization.

Unlike Berry, however, Jablonski gives a detailed "roadmap" for the kinds of training each employee will receive. He divides the training into three basic categories, the first two consisting of more generic training and the third being customized to the audience. These categories are described below.

1. Awareness Training. This is the pivotal introduction to TQM and should facilitate a "buying in." The

following questions should be answered: What is TQM? How can it help us? Who has benefited from TQM?

2. Orientation Training. This should provide a basic understanding of how the organization will be making the transition to TQM. The following questions will be answered: What is our plan? What is my role? What will be expected of me?
3. Skills Training. The training in this category involves the development of specific skills which have been identified through needs analysis. These skills fall into three major areas: planning or problem-solving skills (use of the Quality Improvement Process), data gathering and analysis skills, and team skills (i.e. leadership training, communication skills).

Jablonski stresses the importance of the timing of the training. Each session should provide the employees with enough information so that they may "digest it, discover which facets of TQM they agree with, and identify those parts of TQM they simply do not believe" (p. 101). Jablonski believes that it is important in an organizational change process that people be given an opportunity to identify the issues and assumptions involved so that they can be resolved as the process continues.

Finally, in Phase 4 - Diversification, the company has adopted and accepted TQM. At this point the people in

the organization begin to extend TQM efforts to subordinate and supplier organizations. This phase is similar to Berry's Phase Three, in which success has been demonstrated and the structures are in place to keep the continuous improvement process operating.

In summary, there are many similarities between the implementation approaches described by Berry and Jablonski. They both stress the importance of strategic planning and commitment beginning at the executive level of the organization. Both stress the importance of anticipating resistance to organizational change and developing contingencies for dealing with this resistance, including modelling from executive and management levels and consistency of implementation procedures with Total Quality Management practice, i.e. getting feedback from the "internal customers" early in the process. Berry stresses the importance of establishing a need for TQM in the beginning, to which Jablonski alludes but which is not a part of his process.

Both Jablonski and Berry stress the importance of training throughout the implementation process. In both models, training is coordinated by the Total Quality Management Coordinator. Jablonski stresses the importance of training for the executive and management levels as being extremely important to the success of TQM, whereas Berry stresses training more at a quality team implementation level. In addition, Jablonski provides a

sequence for implementation which is practical and detailed. He addresses the administration of training, including the sequence of events, timing, needs analysis, evaluation and scheduling. Jablonski acknowledges the importance of getting feedback on the training activities early on in the change process. He implies that how well the activities are designed will influence the outcome of the TQM process.

Although Berry does not discuss the training aspect of TQM implementation in as much detail as Jablonski, he does stress the development of management systems which reward learning in the workplace. A successful TQM organization will not only have to train employees in the new quality techniques and approaches, but will need to have systems in place that reward creativity and informal learning. Training is important primarily as a way of establishing a base of knowledge, attitudes and skills important to TQM, but how effectively these are used in an organization is related to other organizational structures. This idea is developed by Lessem (1991) who discusses the structure of "Total Quality Learning" in an organization. Marsick and Watkins (1990) and Senge (1990) have also stressed the importance of facilitating informal and incidental learning in an organization. Some of the learning activities suggested by these authors include the following: "action learning" for managers or quality teams, informal study

groups, performance review plans that acknowledge informal learning, and career planning and development.

In this section, two models that outline the organizational change process and recommended educational programming involved in the transition to TQM were described. Two themes emerged from these models for the development of the content of quality improvement training. First, in the initial phases of a quality improvement process, training should focus on awareness and orientation activities designed to develop the knowledge and attitudes of employees. These activities would facilitate acceptance of the process and help employees prepare for the changes in organizational structure. Second, the employees at all levels in the organization will need to acquire skills in three major areas: the planning process (i.e. Shewhart cycle - Plan, Do, Check, Act), data gathering and analysis, and team functioning. These five categories of formal quality training -- awareness, orientation, quality improvement process, data gathering and analysis, and team development -- are investigated in the present study.

Management of Quality Training

The administration or management of quality improvement training was described to a limited extent in the previous section. In this section, each component involved in the management of training activities is

reviewed in detail, including needs assessment, design and delivery of training, audience for the training activities, and evaluation of the training.

A detailed process for managing formal quality training is developed by Gryna (Juran & Gryna, 1988) in "Training for Quality," a chapter in Juran's Quality Control Handbook (4th ed.). Gryna describes how massive training for all personnel, not just for quality specialists, is central to the success of the TQM approaches in Japan. He argues that the formal quality training being developed for North American organizations should be based on a needs assessment process that considers the following factors:

> 1. The quality problems and challenges faced by the company . . .;
> 2. The knowledge and skills needed to solve these problems and meet these challenges . . .;
> 3. The knowledge and skills actually possessed by the job holders . . .;
> 4. The training facilities and processes already in existence . . .;
> 5. The prevailing climate for training based on the record of past programs . . .; and,
> 6. "What is different?" Most personnel believe that they are already doing what is needed to achieve the desired quality . . . . (pp. 11.4-11.5)

The above process is similar to that described as part of Berry's (1991) Phase One and Jablonski's (1990) Phase 2, where the attitudes of employees, the corporate culture and climate, and customer requirements are assessed in the early stages of the quality improvement process. These authors recommend the use of a variety of assessment techniques, including determination of

competencies required for members of a quality improvement team, measurements of the knowledge, attitudes and skills possessed by the employees, and determination of the gaps in knowledge, attitudes and skills. The measurement tools could include various surveys administered to clients, employees, management and executive. According to Gryna (1988), the results of the needs assessment would ensure that the purpose and goals of the training activities are customized to the organization. Once the purpose has been determined, Gryna describes a planning approach that mirrors the quality improvement process (i.e. Plan, Do, Check, Act). Gryna outlines a six-step process for development of the quality training activities:

1. Define the purpose . . .;
2. Identify alternatives which will achieve the purpose . . .;
3. Analyze the alternatives . . .;
4. Design the actual program . . .;
5. Implement the solution . . .; and,
6. Evaluate the results (pp. 11.7-11.8).

Once training has been identified as a major strategy for quality improvement implementation, programs must then be designed and delivered. Jablonski (1990) stresses the importance of using external consultants to lend credibility to the organizational change process and, being an American, he recommends trainers based in the United States. Most of the literature on Total Quality Management has been written by management consultants in the United States and many of the related courses are offered by American experts (Gryna, 1988).

However, the magnitude of a comprehensive quality training program makes it impractical to rely on outside consultants; Gryna recommends that internal trainers be used as the primary designers and facilitators for the quality training program. He stresses that these trainers should be content experts with skills in group facilitation.

The planning for formal quality training will involve decisions about who will receive the training. Gryna and Jablonski stress the importance of providing quality improvement training to all levels of employees, including executive and management. Training for the executives in an organization is important, as they are responsible for guiding and modelling the quality improvement process. These authors warn that the change process will not be successful if the executives are not involved in all phases.

All components of the quality improvement process are important; however, the evaluation is viewed by Jablonski (1990) and Gryna (1988) as being an essential part of program development. It should be based on the goals and objectives developed from the needs assessment, and it should provide feedback about the effectiveness of the programs. Jablonski (1990) believes that a process for evaluation should be built into the program from the beginning and should result in measurements that will provide information about the cost-effectiveness of the

training as well as allowing for changes early in the program development. As discussed in the previous section, the four levels of evaluation recommended by Jablonski are: (a) reaction; (b) learning; (c) behaviour; and, (d) business results.

The planning model for quality training activities as described by experts in quality improvement is, in essence, the same as that recommended by specialists in training and development and curriculum development for all types of educational activities (i.e. Fishman, 1990; Goldstein, 1989; Diamond, 1989; Cranton, 1989; Langenbach, 1988). It is important that the planning process be used in development of quality training because the philosophy and principles of a quality improvement process such as Total Quality Management espouse its importance. The training activities provide an opportunity not only to teach the process, but to model it. However, as Brookfield (1986) points out, a discrepancy often occurs between texts on program development and the real world of practice. He calls this a "theory-practice disjunction." There is a paucity of studies investigating how well the practice of managing quality improvement training matches theory, or how the various practices or processes impact success.

The importance of the present study is that actual practice in the management of formal quality training activities in organizations in the Edmonton area is

described and compared to the content and process recommended by experts (i.e. Jablonski, 1990; Gryna, 1988, Berry, 1991) for development of formal quality training activities. In order to accomplish this task, an instrument was developed which combined essential elements of curriculum design and the quality improvement process into a single model, and which was used to compare processes among varied organizations.

The literature suggests that the adoption of a quality improvement process is an important trend in organizational development. When a quality improvement process is initiated, education becomes an important part of business. This study represents an attempt to describe how formal quality training is being managed in the Edmonton, Alberta area.

CHAPTER III

RESEARCH METHODOLOGY

Introduction

In this chapter, the research methodology for the study is described. The research questions are identified, the sample selection procedure and the data collection process are described, and the approach to data analysis is outlined. Finally, a description of the ethical guidelines for the study is included.

In short, a descriptive survey was designed involving primarily quantitative analysis. A questionnaire was developed for the purposes of this study. The development and administration of this instrument is described in detail in this chapter.

Research Questions

The question which was used to guide the research was: "How are organizations, in the Edmonton, Alberta area, which are in the process of adopting a quality improvement process, such as Total Quality Management, managing formal quality training activities?"

Five sub-questions identified in Chapter I (p. 4) were used to develop a three-part questionnaire for this

study (see Appendix A for a copy of the instrument). In this section, the method for collecting data for each sub-question is described.

Sub-question #1

What types of organizations are offering formal quality training activities in the Edmonton, Alberta area?

In order to describe the organizations that participated in the study, three demographic components were explored in "Part A: Demographic Information" of the questionnaire. The respondents were asked to identify the following: status of organization (profit, not-for-profit, government); size of organization (less than 100, 101 to 500, 501 to 1,000, greater than 1,000); and, whether quality improvement was part of a strategic planning process (yes/no).

Data were also collected for sub-questions #2 and #3 in "Part A: Demographic Information."

Sub-question #2

Who is responsible for coordination/administration of formal quality training activities in these organizations?

The respondents were provided with eight categories and selected the category that best described their position in the organization. The eight categories were: Human Resource Manager, Quality Control Coordinator, Executive Officer, Internal Trainer, Director of Education/Quality Assurance, Quality Control Manager, TQM Consultant, and Other - please specify.

Sub-question #3

When were the formal quality training activities initiated?

The respondents were provided with four categories and asked to select one. These categories were: in the planning stages, 0 to 12 months, more than 2 years ago, and 13 to 23 months.

Sub-question #4

What formal quality training activities are being offered or planned by these organizations?

In order to be able to make comparisons between organizations, five units of training activities were listed in the first column of the questionnaire, "Part B: Quality Training Activities" (Step I). These were derived from the model for training developed by Jablonski (1990) and are as follows:

1. Awareness - introduction to quality concepts, principles and strategies;
2. Orientation - presentation of the organizational plan for quality improvement (i.e. organizational structure, employee roles and responsibilities);
3. Quality Improvement Process - development of planning skills, based on the Shewhart Cycle;
4. Data Gathering and Analysis Techniques - development of skills for identifying customers and their needs, survey development and analysis; and,
5. Team Building - development of team skills, such as

communication, leadership, performance management, etc.

Although this list is not exhaustive, it represents the key training activities as described in Jablonski's model. The selection of these activities is also supported by the quality training models of Berry (1991) and Gryna (1988).

On the questionnaire, the respondents indicated whether or not their organization offered or planned to offer each of the five activities identified in the past or present (within the past 12 months), in the future (next 12 months), or if the activity was Not Applicable for their organization.

In Step I of "Part B: Quality Training Activities," the respondents indicated which of the five categories of quality training their organization offered or planned to offer. Then, in Steps II through VI, they described the management of the training activities identified in Step I. To collect these data, the questionnaire was developed as a matrix, with five categories of quality training activities listed in Column I (Step I) and questions exploring five components of the management of quality training across the top. The result was an instrument containing 50 cells for data collection.

The data collected in Steps II to VI were used to answer Sub-question #5.

Sub-question #5

How are the formal quality training activities being managed?

For this sub-question, five components were explored, and categories for each component were derived by integrating concepts from the training models developed by Jablonski (1990), Berry (1991) and Gryna (1988). The five components investigated in Sub-question #5 and the categories explored for each are described below.

For component (a), needs assessment, the question "How is the need for formal quality training activities determined?" was posed in the second column of "Part B: Quality Training Activities" (Step II) on the questionnaire. Then, six numbered categories were provided to the respondents, for which multiple choices were possible. These categories included the following choices: staff survey; strategic plan; expert opinion; customer survey; management survey; other. The respondents listed the numbers of his/her choices in the appropriate cells on the questionnaire.

For component (b), development of quality training, the question "Who develops the curriculum and training materials?" was presented in the third column of "Part B: Quality Training Activities" (Step III) on the questionnaire. Four categories were provided to the respondents, for which multiple choices were possible, that is: internal consultant/trainer; external consultant - Canada; external consultant - U.S.; other. Again, the

respondents recorded the numbers of their choices in the appropriate cells on the questionnaire.

For component (c), delivery of quality training, the question "Who delivers the formal quality training activities?" was presented in the fourth column of Part B on the questionnaire (Step IV). Four categories were provided to the respondents, for which multiple choices were possible, as follows: internal consultant/trainer; external consultant - Canada; external consultant - U.S.; other. The respondents recorded the numbers of their choices in the appropriate cells on the questionnaire.

For component (d), audience of quality training, the question "Who receives the formal quality training activities?" was posed in the fifth column on Part B of the questionnaire (Step V) and the respondents were provided four categories, for which multiple choices were possible. These were as follows: executives; management; employees; others. The respondents recorded the numbers of their choices in the appropriate cells on the questionnaire.

For component (e), evaluation of quality training, the question "How are the formal quality training activities evaluated?" was presented in the sixth and final column on "Part B: Quality Training Activities" (Step VI) on the questionnaire. It provided the respondents with six categories for which they could make multiple choices, as follows: participant evaluation;

tests of skill, knowledge and behaviour; evaluation of on-the-job behaviour; measurement of business results; other; none of the above. The respondents recorded the numbers of their choices in the appropriate cells on the questionnaire.

"Part C: Additional Quality Training Activities" was included as the third page of the questionnaire and completion was optional. It provided respondents with the opportunity to include any additional training activities which they deemed important, and to describe them using the same process as in Part B of the questionnaire. At the bottom of the third page was an open-ended section designed to elicit comments about the instrument, as well as about the quality training program in the organization.

In summary, the researcher developed a three-part questionnaire to collect data for the research sub-questions. The questionnaire was administered to a sample, selected through the procedure which is outlined below.

Sample

A sample of 29 Edmonton-area organizations that had initiated formal quality training was surveyed. A list of organizations engaged in quality training was identified by knowledgeable people who were contacted through the following organizations: (a) American Society for Quality Control - Edmonton Chapter; (b) Management

Consultants; (c) Alberta Society for Human Resource and Organizational Development; and, (d) Human Resource Centre, University of Alberta, Faculty of Business.

The criteria for "knowledgeable people" was that they were involved in the provision of quality training, either within their own organization or as a consultant to other organizations.

Criteria for Selection of Organizations

To be included in this study, the organizations had already offered some formal quality training activities or planned to in the next 12 months. This could have included: (a) purchase of a formal quality improvement training program; (b) sponsored attendance of employees at an external formal quality improvement training program; or, (c) internal development of a formal quality control training program (may still be in progress).

Criteria for Selection of Participants

To be included in this study, the participants were responsible for management (coordination and administration) of formal quality training activities within their organization.

Data Collection

The researcher used the following data collection procedure for this study:

1. A questionnaire was developed, and an "expert panel" consisting of one member from the business community and two from the Education Faculty at the University of Alberta gave feedback to the researcher concerning design and content.
2. A pilot study was conducted by the researcher with three participants, and changes were incorporated into the final instrument. The responses collected in the pilot study were included in the findings of the study.
3. The researcher contacted the participants for the study by telephone (see Appendix B). During this conversation, screening questions were asked using the criteria for selection of organizations and participants. If the criteria were met, the study was described (i.e. purpose of study, benefits of participating) and the participants were then asked if they would be willing to complete a questionnaire. If they agreed, the questionnaire and cover letter (see Appendix C) were mailed to them. A stamped, self-addressed envelope was included and, as a token of appreciation, a bibliography of relevant literature was also included.

4. The participants were telephoned one week after the mail-out as a reminder.

Data Analysis

A total of 23 questionnaires were returned as of May 22, 1992, for a response rate of 79% (see Appendix D for a complete list of the responding organizations). The questionnaire was used as a framework for data analysis. In Chapter IV, "Research Findings," the data are presented in tables and discussed. The data collected in "Part A: Demographic Information" were used to answer Sub-questions #1, #2 and #3. Frequencies and percentages were calculated for the responses collected for status, size, strategic plan, time of initiation, and position of coordinator. Table 1 was developed to represent these findings (p. 41).

To answer Sub-Question #4, data were collected in the first column (Step I) of the questionnaire, "Part B: Quality Training Activities." Frequencies were calculated which reflected the occurrence of each of the five categories (Awareness, Orientation, Quality Improvement Process, Data Gathering and Analysis, and Team Development) of quality training, offered either in the past/ongoing or in the future. These data are presented in Table 2 (p. 44).

The data collected for Sub-question #5 were obtained from the second to sixth columns (Steps II to VI)

on "Part B" of the questionnaire and are presented in Tables 3 to 7 (pp. 47-53). Cumulative frequencies were calculated for the categories investigated for each of the five components: (a) needs assessment; (b) development of quality training; (c) delivery of quality training; (d) audience; and, (e) evaluation of quality training. The results are reported in the five tables mentioned above.

The additional data collected on the questionnaire, "Part C: Additional Quality Training Activities," were used to augment the major findings from Parts A and B of the questionnaire and are incorporated in narrative form in the Findings section (see Chapter IV).

In Chapter V, "Summary and Conclusions," comparisons were made between the observed patterns in management of formal quality training activities and the recommended or "ideal" approach as recommended by Jablonski (1990), Berry (1991) and Gryna (1988).

Ethics

The guidelines set out by the University of Alberta Ethics Review Policies and Procedures Manual were observed. Participants were fully informed as to the purpose and process of their involvement and they took part after giving voluntary consent. Data reporting and analysis were presented so that individual responses were not attributed to any individual participant or specific organization.

CHAPTER IV

RESEARCH FINDINGS

Introduction

Data for this study were collected using a mail-out questionnaire sent to a sample of 29 organizations. The questionnaires were sent directly to the person responsible for coordination of formal quality training activities. A total of 23 questionnaires were returned for a response rate of 79%. In this chapter, the data are presented in tables and described. Reported percentages in Tables 1 and 2 are rounded off.

Description of Respondents

Table 1 summarizes the demographic information that describes the 23 questionnaire respondents and constitutes the data collected in order to answer Sub-questions #1, #2 and #3:

> Sub-question #1: What types of organizations are offering formal quality training activities in the Edmonton area?
>
> Sub-question #2: Who is responsible for coordination/administration of formal quality training activities in these organizations?
>
> Sub-question #3: When were the formal quality training activities initiated?

Table 1
Description of Respondents

(n = 23)

	n	%
Status of Organization		
Profit	16	70
Not-for-profit	3	13
Government	4	17
Size of Organization		
Less than 100	--	--
101 - 500	2	9
501 - 1,000	2	9
Greater than 1,000	19	82
Strategic Plan		
Yes	19	82
No	4	18
Time of Initiation of Formal Quality Training		
In the planning stages	3	13
0 to 12 months	1	4
13 to 23 months	4	17
More than two years ago	15	65
Quality Training Coordination		
Management	17	74
Consultant/Trainer	6	26

Examination of the data reveals certain patterns in the characteristics of the respondents. The status of the majority of organizations (70%) was "profit" (privately owned business), and 82% reported organizational size to be more than 1,000 employees, including management and executive. All organizations had more than 100 employees. Most (82%) had developed a strategic plan to guide the implementation of a quality improvement process. This process had been initiated more than two years earlier for the majority (65%) of respondents.

The six categories provided for Sub-question #2 (see p. 30) were collapsed into two categories: "Management" and "Consultant/Trainer." The majority (74%) of the respondents occupied a management position in their organization. The various titles which were held included: Manager of Human Resources; Manager of Staff Development; Manager of Quality Training; Coordinator of Quality Improvement; Director of Education; and others. Twenty-six percent were consultants or trainers.

Content of Quality Training Activities

On Part B of the questionnaire, Step I, respondents were asked to identify the quality training activities that their organization currently offered or planned to offer. Respondents were provided with five categories of quality training activities from which to

choose. These categories were adapted from Jablonski's model of quality implementation (1990).

These data are reported in Table 2 and provide information relevant to the fourth research sub-question:

> Sub-question #4: What formal quality training activities are being offered or planned by these organizations?

Under the columns "Past Training Activities," "Future Training Activities" and "Others," n refers to the frequencies or number of times each category of quality training was selected. Then the percentage was calculated by dividing the n by 23 (the total number of respondents) and multiplying by 100. The percentages were used to identify patterns among the organizations surveyed.

For past or ongoing use, training activities involving "Awareness," "Quality Improvement Process" and "Team Building" were selected most frequently (83%, 83% and 87%, respectively). "Orientation" and "Data Gathering" occurred for 70% and 65%, respectively. Each of the five activities were chosen for future training by more than 50% of the respondents.

In Part C, respondents were given an opportunity to describe any additional quality training activities not included in the five categories given in Part B. The other activities identified in Part C of the questionnaire included courses that fit into one of the five categories. The other training activities identified were most

Table 2
Content of Quality Training Activities
(n = 23)

Categories of Quality Training Activities	Past/Ongoing Training Activities		Future Training Activities		Not Offered	
	n	%	n	%	n	%
Awareness	19	83	14	61	1	5
Orientation	16	70	13	61	4	18
Quality Improvement Process	19	83	15	65	1	5
Data Gathering	15	65	13	57	5	23
Team Building	20	87	14	61	2	9

frequently examples of "Team Building," for example, "Facilitation Skills" was named by four respondents.

Management of Quality Training Activities

Tables 3 to 7 present data that describe the management of the formal quality training activities (Sub-question #5). These data were obtained from the responses on Part B of the questionnaire, Steps II through VI, where five components of quality training activities -- (a) Needs Assessment, (b) Development of Quality Training, (c) Delivery of Quality Training, (d) Audience of Quality Training, and (e) Evaluation of Quality Training -- were investigated. Several categories were provided to the respondents for five questions that explored the five components of quality training (see Chapter III). Frequencies (or n) were obtained by calculating the number of times each category was selected on the 23 returned questionnaires. For example, in Table 3, for the Needs Assessment categories -- staff survey, strategic plan, expert opinion, customer survey, management survey, and other -- the number of times each category was selected by the 23 respondents for each of the five quality training activities (Awareness, Orientation, etc.) was calculated. Then the "total" number of times each needs assessment category was selected was calculated by adding these five categories, reported in Table 3 as

"Total." This is also referred to as "cumulative frequency."

It should be noted that for each question in Steps II through VI, the respondents could make multiple choices. Therefore, the frequencies reported in Tables 3 to 7 do not add up to 23, thus percentages could not be calculated. Cumulative frequencies are compared in the analysis that follows, and trends or patterns are described.

Needs Assessment

Table 3 summarizes how the need for each of the five categories of training activities was determined. For quality training offered in the past, the cumulative frequencies for "strategic plan" (49) and "expert opinion" (51) were greater by 50% or more than for the other needs assessment strategies (staff survey - 23; management survey - 25; customer survey - 11; other - 9). Apparently, "strategic plan" and "expert opinion" were used most frequently to determine that the training activities were needed. There was no obvious difference between the five categories of quality training activities in how the needs were determined.

The pattern noted for future training activities was similar for those activities offered in the past and those which were ongoing. Cumulative frequencies for "strategic plan" (34) and "expert opinion" (25) were

Table 3
Management of Quality Training: Needs Assessment

Categories of Quality Training Activities	Needs Assessment Categories					
	Staff Survey	Strategic Plan	Expert Opinion	Customer Survey	Management Survey	Other
	n	n	n	n	n	n
Past/Ongoing						
Awareness	4	11	9	2	5	2
Orientation	4	13	10	1	6	--
Quality Improvement Process	5	8	14	2	4	2
Data Gathering	4	7	8	3	2	1
Team Building	7	10	10	3	8	4
TOTAL *	23	49	51	11	25	9
Future						
Awareness	5	6	3	1	2	3
Orientation	5	9	3	1	4	1
Quality Improvement Process	3	7	5	2	4	3
Data Gathering	2	6	7	3	5	1
Team Building	5	6	7	3	5	3
TOTAL *	20	34	25	10	20	11

* Represents cumulative frequencies of needs assessment categories.

greater than for the other needs assessment strategies. The cumulative frequencies of "staff survey" (20) and "management" (20) suggests that in future, organizations plan to rely increasingly on staff and management surveys to determine what quality training activities are needed.

Other needs assessment techniques and sources described in Part C of the questionnaire were: steering or working committees; a quality network: focus groups with customers and employees; and, use of employee and customer feedback. One respondent indicated that just-in-time (J.I.T.) training was useful for team building because it was based on individualized needs assessment, and this approach acknowledged the unique characteristics of each team by providing them with training activities as needed.

Development of Quality Training

Table 4 presents data that describe who develops the training activities (i.e. curriculum, training materials) for each of the five categories.

Comparison of the cumulative frequencies for each of the categories of developers of quality training indicates that for both past/ongoing and future courses, the developer was most frequently an "internal trainer/consultant" (cumulative frequency: 71 for past/ongoing and 55 for future quality training activities). External consultants, when used, were more

Table 4
Management of Quality Training: Development

Categories of Quality Training Activities	Categories of Developers of Quality Training			
	Internal Consultant or Trainer	External Consultant - Canada	External Consultant - U.S.	Other
Past/Ongoing	n	n	n	n
Awareness	17	8	5	1
Orientation	16	2	3	1
Quality Improvement Process	11	10	9	--
Data Gathering	12	5	7	2
Team Building	15	12	7	1
TOTAL *	71	37	31	5
Future				
Awareness	12	5	4	4
Orientation	13	4	3	1
Quality Improvement Process	9	7	6	--
Data Gathering	11	4	4	1
Team Building	10	8	5	1
TOTAL *	55	28	22	7

* Represents cumulative frequencies of categories of developers of quality training activities.

frequently from Canada (cumulative frequency = 37) than from the United States (cumulative frequency = 31) where most of the quality training programs have originated. This provides evidence that there is expertise in quality training that is being accessed in Canada. When external consultants have been used for development of past/ongoing courses, it has most frequently been for the "Quality Improvement Process" and for "Team Building."

Delivery of Training

Table 5 presents data describing who was responsible for delivering (i.e. leading, teaching, facilitating) the quality training activities.

Using the cumulative frequencies as a basis for comparison, it appears that internal consultants/trainers were most frequently responsible for delivering the training activities (cumulative frequency = 77) compared to "external consultants - Canada" (cumulative frequency = 22) and "external consultants - U.S." (cumulative frequency = 26). There was no major difference between the use of external consultants from Canada and from the United States for delivery of courses. A similar pattern in cumulative frequencies was noted for the delivery of future quality training activities (internal consultants/ trainers - 62; external consultants [Canada] - 19; external consultants [U.S.] - 11).

Table 5
Management of Quality Training: Delivery

Categories of Quality Training Activities	Categories of Who Delivered Quality Training Activity			
	Internal Consultant or Trainer	External Consultant - Canada	External Consultant - U.S.	Other
Past/Ongoing	n	n	n	n
Awareness	15	4	5	6
Orientation	14	2	3	7
Quality Improvement Process	16	5	6	2
Data Gathering	15	2	5	--
Team Building	17	9	7	--
TOTAL *	77	22	26	15
Future				
Awareness	12	2	1	4
Orientation	13	2	2	6
Quality Improvement Process	14	4	3	2
Data Gathering	11	3	3	2
Team Building	12	8	2	2
TOTAL *	62	19	11	16

* Represents cumulative frequencies categories of who delivered quality training activities.

Training Audience

Table 6 describes the audience for the quality training activities in the organizations surveyed. Jablonski (1990) and Gryna (1988) recommend that all levels of employees receive the training -- beginning with the executive who are responsible for leading and modelling the quality improvement approaches.

Comparison of the cumulative frequencies, which indicate what level of employees receive the quality training, indicates that for the past/ongoing quality training activities, management and employees were usually the recipient of the training activities (cumulative frequencies = 85 and 83, respectively) and executives were the audience at fewer quality training activities overall (cumulative frequency = 56).

This pattern is also evident when the cumulative frequencies are compared for the audience of future quality training activities: 56 for management, 63 for employees, compared to only 33 for executive, reflecting a trend to provide quality training mainly for management and employees.

Evaluation of Quality Training

In Table 7, data describe how the effectiveness of the training activities are evaluated.

Table 6
Management of Quality Training: Audience

Categories of Quality Training Activities	Categories of Audience of Quality Training Activities			
	Executive	Management	Employees	Other
Past/Ongoing	n	n	n	n
Awareness	14	18	18	3
Orientation	9	15	16	1
Quality Improvement Process	12	19	17	4
Data Gathering	8	14	15	2
Team Building	13	19	17	2
TOTAL *	56	85	83	12
Future				
Awareness	7	9	12	3
Orientation	6	10	12	1
Quality Improvement Process	5	13	13	3
Data Gathering	6	11	12	2
Team Building	9	13	14	2
TOTAL *	33	56	63	8

* Represents cumulative frequencies of categories of audience of quality training activities.

Table 7
Management of Quality Training: Evaluation Approaches

Categories of Quality Training Activities	Categories of Evaluation Approaches			
	Participant Evaluation	Tests of Skill, Knowledge	Evaluation of On - the - Job Behaviour	Measurement of Business Results
Past/Ongoing	n	n	n	n
Awareness	16	1	7	4
Orientation	12	2	4	2
Quality Improvement Process	17	2	9	10
Data Gathering	11	1	8	9
Team Building	16	3	13	5
TOTAL *	62	9	41	30
Future				
Awareness	12	2	8	7
Orientation	7	2	6	4
Quality Improvement Process	10	2	11	15
Data Gathering	9	1	8	11
Team Building	13	3	12	6
TOTAL *	51	11	46	43

* Represents cumulative frequencies of categories of evaluation approaches.

Comparison of the cumulative frequencies indicates that for the past/ongoing quality training activities, participant evaluations (cumulative frequency = 62) were used most frequently, followed by evaluation of on-the-job behaviour (cumulative frequency = 41) and measurement of business results (cumulative frequency = 30). Tests were used infrequently (cumulative frequency = 9). Similar patterns were noted for future quality training courses. The cumulative frequencies were 51 for participant evaluations, 46 for evaluation of on-the-job behaviour, 43 for measurement of business results, and only 11 for tests of skills, attitudes and behaviour. It should be noted that for the future training activities, the proportion of the evaluation strategy "measurement of business results" increased.

In this chapter, the results of the study were presented in tables and described in narrative. Chapter V provides a summary of these findings and the resulting conclusions.

CHAPTER V

SUMMARY AND CONCLUSIONS

Introduction

In this chapter, the data relevant to each of the five sub-questions are summarized. These results are compared to the findings in case study literature, or to the recommended approaches to the content and process of the quality training activities.

Description of Respondents

Examination of the data revealed certain patterns in the organizations surveyed. The findings for Sub-questions #1, #2 and #3 are:

> In the Edmonton area, most of the 23 responding organizations that have developed quality training programs are "profit" (privately owned businesses).
>
> The responding organizations all have more than 100 employees, and 82% have more than 1,000.
>
> Most of the organizations (82%) have a strategic plan to guide quality improvement initiatives.
>
> Many (65%) of the organizations have been involved in training for quality improvement for more than two years.
>
> The person responsible for coordination of quality training is most often in management.

From these results, it can be concluded that large business organizations are more likely to develop formal quality training activities than small businesses or government organizations. This finding is in congruence with the case study literature. However, this study does indicate that not-for-profit and government organizations in the Edmonton, Alberta area are also beginning to implement quality improvement initiatives. The motivation for these organizations may be related more to efficiency, or to "doing more with less," rather than to competitiveness for consumer dollars.

Many of the quality training programs have been established for more than two years in organizations in the Edmonton area, are the responsibility of managers, and are supported through strategic planning. This provides evidence that quality improvement programs are not a passing fad, but are established and successful. The finding that one third of the organizations surveyed are in the early stages (0 to 24 months) of a quality improvement process indicates a continuing trend in the Edmonton area to adopt a quality improvement process.

Content of Quality Training

The patterns observed with respect to the content and timing of the quality training activities (Sub-question #4) are as follows:

Past and ongoing quality training activities occurred most frequently in the categories "Awareness" (83%), "Quality Improvement Process" (83%) and "Team Building" (87%).

"Orientation" and "Data Gathering" training activities were also offered by the majority of respondents (70% and 65%, respectively).

All five categories were selected by organizations with plans for future quality training activities.

These results indicate that the five content categories adapted from Jablonski's model are representative of the formal quality training activities offered in the organizations surveyed. In this study, a model that condenses and integrates the content of quality training into five categories appears to have validity in organizations.

The validity of this model is supported, first, by the results of the pilot study. All three pilot participants indicated that the condensed content categories (Step I, Column I) and sequence of the five training components explored in Steps II to VI, Columns II to VI, were descriptive of the quality training courses offered by their organization. One pilot participant described a large number of specific quality courses, most fitting into one of the five categories listed in Step I, Column I.

Second, Jablonski's model is supported by the findings based on the responses on Part C: Additional Quality Training Activities. The other formal quality training activities listed by respondents were examples of

specific training courses that fit into the five generic, or general, categories listed in Part B, Column I of the questionnaire.

Third, support for the model was evident in the finding that only three of the 23 respondents questioned the validity or appropriateness of the categories. These three made written comments regarding what they perceived to be limitations of the categories. One respondent indicated that the inclusion of sequence of training, timing, length of session, and percentage of employees participating were essential components of the training program. Two others described the importance of the relationship of quality training to other management or organizational development functions such as performance planning or work redesign systems.

In summary, the use of these five categories of quality training in the implementation of a quality improvement process would provide a framework for an organization to use in developing and evaluating the content of its quality training programs. Comments written by three respondents indicated that the model would be more useful if it was expanded to include sequence of the training activities, the length of the training activities, whether the categories provided were combined in one or more courses in the organizations surveyed, and the relationship of quality training to other organizational functions. This information would be

important for further development of a model based on the five categories of training as described by Jablonski (1990).

Management of Quality Training

The patterns observed for the management of the five components of quality training activities (Sub-question #5) are as follows:

a) Needs Assessment

> The needs assessment strategies selected by the respondents for all five categories of quality training were predominantly "strategic plan" or "expert opinion."

It cannot be ascertained how these strategies were used; however, the results imply that the need for the quality training activities is most often determined by the executive through the strategic planning process, or by an expert such as a quality improvement consultant. Observation of the frequencies of categories of needs assessment across the five categories of quality training activities in Table 3 indicates that most of the respondents do not distinguish between the first two categories ("Awareness" and "Orientation") and the last three ("Quality Improvement Process," "Data Gathering and Analysis" and "Team Building") in the needs assessment strategies selected.

According to Jablonski (1990), the first two categories are focused primarily on knowledge and attitude

change in the employees. "Awareness" involves an initial introduction to quality improvement concepts and principles, and "Orientation" occurs after the organization has developed a strategy for quality improvement. This activity serves to inform the staff of the organizational plan and to facilitate acceptance of the strategy. Jablonski indicates that the need for these training activities is usually determined by an expert or managing body such as a quality improvement steering committee.

In contrast, the last three categories deal with skill development: "Quality Improvement Process" focuses on understanding and application of the problem-solving approach central to quality improvement efforts; "Data Gathering and Analysis" focuses on skills in identifying customers and their needs and expectations using surveys and statistical analysis techniques; and, "Team Building" focuses on developing interpersonal skills important for being a contributing team member. Jablonski suggests that skill development must occur based on feedback from the internal client -- the employees -- once the organizational strategy is in place and they are oriented to it. This could occur using a variety of techniques, including staff surveys, management surveys, focus groups, and performance reviews. Other approaches could include provision of team self-assessment tools that allow the teams to identify areas of strength and weakness and to

seek out developmental opportunities based on this assessment. If, instead, the activities are prescribed, it may impede the employee's development of the attitudes and skills central to a quality improvement process. Such an outcome would result from employees being taught one thing (i.e. to act on client feedback) and yet treated another way (i.e. told what skills they need to develop).

b) Development of Quality Training Activities

c) Delivery of Quality Training Activities

> Internal consultants or trainers were the employees most often responsible for the development and delivery of the quality training activities.
>
> External consultants, when used for course development, were more often from Canada than from the United States.
>
> When external consultants were used for course development, it was most often for "Quality Improvement Process" or "Team Building" activities.

It can be concluded that organizations rely primarily on internal trainers for the development and delivery of formal quality training. What is not known is the background and educational preparation of these personnel. Are they specialists in quality improvement or are they training/education experts? This is important information because an essential component of quality training involves development of a massive education program for all levels of employees. It would therefore be important that the courses be developed by personnel with expertise in educational planning, curriculum design

and delivery of courses. In addition, there should be evidence that the goals and objectives guiding curriculum development are based on the results of needs assessment.

From the results of this study it can be concluded that there is a base of expertise within the local management consulting community (Canada) which can be utilized by organizations in the development of quality training programs. This bodes well for organizations new to the quality improvement process, as they will be able to find support locally for their training initiatives.

d) Audience of Quality Training Activities

Management and employees are the recipients of quality training more frequently than executives.

Jablonski (1990) stresses the importance of executives receiving training in the areas of "Awareness" and "Orientation" and to develop skills related to quality improvement, such as the three skill categories in this study. This study suggests that in many organizations, this is not occurring. Further investigation is needed to ascertain the reasons for this trend. Is it possible that the quality improvement process is being prescribed for the workers in some organizations and not adopted or modelled by executive? Jablonski stresses that lack of executive involvement will impede the effectiveness of the quality improvement training program. It would therefore be important that

executive involvement be assured before an organization develops a quality training program.

e) Evaluation of Quality Training Activities

The effectiveness of quality training is measured most frequently by participant evaluation, followed by evaluation of on-the-job behaviour and measurement of business results.

Participant evaluation, the most frequent measurement used, is generally regarded as being a very limited approach to evaluation. It gives information on level of satisfaction with the training event but is not a reliable method of assessing changes in attitudes, knowledge and skills (Cranton, 1989). Jablonski (1990) recommends the use of four levels of evaluation: reaction (participant evaluation); assessment of learning (tests of skills, knowledge, attitudes); assessment of changes in behaviour (evaluation of on-the-job behaviour); and, measurement of business results. He claims that the use of all four will assist in the development of an effective quality training program. The results of this study suggest that many of the organizations surveyed are not utilizing all four evaluation strategies systematically.

In summary, this study provides a limited exploration of the evaluation strategies used. For example, it cannot be ascertained how "evaluation of on-the-job behaviour" or "measurement of business results" are conducted in the participating organizations. However, the area of evaluation is of particular

importance in the management of quality training, for it provides feedback from the internal clients (the recipient of training, the work teams, the executive) about the results and effectiveness of the activity, and further research should investigate evaluation strategies for formal quality training in more depth.

The present study was broad in scope and examined overall patterns in the management of quality training in organizations in the Edmonton, Alberta area. Based on the summary and conclusions described in this chapter, recommendations outlined in Chapter VI address program planning issues that have relevance for those who have responsibility for the administration and coordination of quality training activities. Recommendations for further research are also described in Chapter VI.

CHAPTER VI

RECOMMENDATIONS

Introduction

In the present study, the management of quality training programs in 23 organizations was explored using a single model to integrate and compare the structures, content and processes involved. Recommendations are made based on the summary of results and conclusions for each sub-question discussed in Chapter V.

Description of Respondents

This study provides evidence that the implementation of a quality improvement process involving an extensive educational program is being adopted by several large organizations in the Edmonton, Alberta area. The patterns observed in the organizations with respect to status, size, presence of strategic plan, time of initiation, and position of quality training coordinator are similar to those patterns described in case study literature for many national and international organizations. This indicates that the sample of 23 is representative of the population of organizations that have adopted a quality improvement process.

Recommendations arising from the results are directed to the coordinators of formal quality training for the development of the content and management of the training activities in their organization.

Content of Quality Training

This study presents evidence that the five content categories adapted from the work of Jablonski (1990) are representative of the quality training activities offered in organizations to all levels of employees. Two of the categories emphasize the development of knowledge and attitudes ("Awareness" and "Orientation") and three emphasize skills important for functioning as part of a quality improvement team ("Quality Improvement Process," "Data Gathering and Analysis" and "Team Building").

Recommendation #1

It is recommended that the five above-mentioned content categories be used as the basic framework for the implementation of a quality improvement training program, and that future research continue to investigate the validity of these categories.

Management of Quality Training

The management of quality training is a complex process. The development of a variety of content areas, customized to a variety of employee levels, indicates the importance of a process that will incorporate all the important planning components, such as determination of

needs, development and delivery of courses, customizing activities to a variety of audiences, and continual and ongoing evaluation. If the quality training activities are to model the quality improvement principles, then the evaluation of the activities should lead to continuous improvement of the training process.

Recommendation #2

> It is recommended that a planning model such as the one used in this study, which combines content areas with a sequential planning process for training development, be used by those involved in quality training programming, i.e. coordination, development, delivery.

Use of this model would ensure that quality training embodies "quality" principles by providing a framework that includes all the important training components. It would also provide a simplified approach more accessible to newcomers for quality implementation. Other components could be added to the model, such as the sequence of the delivery of each of the five categories of quality training activities and the sequence and length of courses within each category. The development of the processes within the model would be unique to each organization.

By using a model, such as the one used in the present study, to guide the development of the training program, the coordinators should be able to increase the effectiveness of both internal trainers and external consultants/trainers. Proposals from external consultants could be judged using criteria based on the model, for

example: What kinds of needs assessment is proposed by the consultant? how well do the goals and objectives align with the needs? is there an evaluation built into the training activity? It will also be important that the consultant demonstrate expertise not only in the content areas, but in the process of developing and delivering a training program.

This study represents an exploration of general patterns in the organizations surveyed for five components of the management of formal quality training. Recommendations #3 to #6 are therefore general in focus; specific recommendations would need to be based on research that explores these components in more depth in individual organizations.

Recommendation #3 is based on the summary and conclusions made for the needs assessment component of the management of formal quality training. The needs assessment strategies selected by the respondents for all five categories were predominantly "strategic plan" or "expert opinion."

Recommendation #3

> It is recommended that the coordinators of formal quality training use a variety of needs assessment strategies to determine which quality training activities are required in their organization.

The use of needs assessments strategies such as customer surveys, management surveys, employee surveys, and self-assessment by teams could be used to verify the

need for training activities recommended through strategic planning or by experts.

Based on the summary and conclusions in Chapter V, recommendation #4 is focused on the components (b) development of quality training activities and (c) delivery of quality training components. Most of the organizations surveyed rely on internal consultants for the development and delivery of quality training activities.

Recommendation #4

> In consideration of the costs involved in implementing an organization-wide quality education program, it is recommended that the coordinators of formal quality training continue to develop expertise in the development and delivery of quality training within their organizations, i.e., using internal trainers, or to utilize consultants who are based locally.

Recommendation #5 is based on the summary and conclusions made for component (d), that is, audience of formal quality training (see Chapter V).

Recommendation #5

> It is recommended that the coordinators of quality training determine if the executives in the organization are participating in the training events and if they are involved in guiding and modelling the process.

The importance of executive involvement has been stressed repeatedly in the literature and the coordinators should assess whether the executives in the organization demonstrate and exhibit the knowledge, attitudes and skills that the employees are learning in the quality

improvement courses. If not, an emphasis could be placed on developing programs for the executive.

The final recommendation directed to the coordinators of formal quality training is based on the conclusions made for component (e), that is, evaluation of formal quality training.

Recommendation #6

> It is recommended that the coordinators of quality training utilize a variety (i.e. four levels) of evaluation approaches to provide feedback to the training department about the effectiveness of the courses.

Jablonski (1990), Berry (1991), Robinson and Robinson (1988), Gryna (1988) and Fishman (1990) emphasize the importance of an effective evaluation procedure in order to ensure that the quality training program models the quality improvement process. This component should be emphasized in further quality training development and research.

Future Research

This study has implications not only for the coordinators of quality training programs, but for professional educators as well. With the advent of widespread employee education such as that involved in quality deployment, the educational community will need to focus on how to develop and assess learning in the workplace. A partnership between education and business

could facilitate the development of increasingly effective workplace educational programs.

Based on the results of the present study, future research projects should target the following:

1. Further development and testing of models of quality improvement training implementation;
2. Development and evaluation of needs assessment tools for quality training activities in the workplace;
3. Investigation of the relationship between the level of acceptance of quality initiatives and the management of needs assessment for the formal quality training activities;
4. Development and evaluation of methods to assess knowledge, attitudes and skill development, which are central to the quality improvement process;
5. Investigation of the relationship between the development of knowledge and attitudes to the development of quality improvement skills on the job; and,
6. Development of evaluation processes to be used in the assessment of the effectiveness of workplace teams.

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APPENDIX A

QUALITY TRAINING QUESTIONNAIRE

Quality Training Questionnaire

There are three parts to this questionnaire. The first, **Part A: Demographic Information**, is on this page. This section will be used to describe the types of organizations which participate in the study.

Part B: Quality Training Activities, is on the attached page, and consists of a grid which you can use to describe your organization's quality training activities. This is the core of the research, and will provide valuable information about quality training trends. In Step I you are provided with a list of quality training activities. Please identify which of those training activities listed: 1) have been delivered or are currently being delivered and, 2) will be delivered in the next 12 months. In Steps II through VI, choose from the categories provided, the best description of how the training activities, identified in Step I, were developed (an example is provided).

Completion of **Part C: Additional Quality Training Activities** is optional. In this section you have an opportunity to include any other information that you feel is important to this study.

Your participation in this study is voluntary. I want to assure you that the information which is being collected using this survey questionnaire will be subject to the rules governing the ethics of research at the University of Alberta. The responses given by individual organizations will not be identified in the final report and will be interpreted with strictest confidence.

Please complete and return the questionnaire in the envelope enclosed by April 24, 1992. If you would like to receive a summary of the survey results please check this box. ❐

QUESTIONNAIRE PART A: DEMOGRAPHIC INFORMATION

1. **Status:**

   Check the one which best describes your organization.

   ___ Profit
   ___ Not-for-profit
   ___ Government (i.e., health care organization, provincial, municipal or federal government department)

2. **Size:**

   Please indicate the number of employees, both full-time and part-time including management and executive, in your organization. Check the category which applies.

   ___ Less than 100
   ___ 101 to 500
   ___ 501 to 1000
   ___ Greater than 1000

3. **Plan:**

   Has your organization developed a strategic plan to guide the implementation of a quality improvement process?

   ___ Yes
   ___ No

4. **When initiated:**

   When was formal quality training initiated in your organization? Choose one of the following.

   ___ In the planning stages
   ___ 0 to 12 months
   ___ 13 to 23 months
   ___ More than 2 years ago

5. **Coordination of Formal Quality Training:**

   Please check the category which best describes your position in the organization.

   ___ Human Resource Manager
   ___ Quality Control Coordinator
   ___ Executive Officer
   ___ Internal Trainer
   ___ Director, Education/Quality Assurance
   ___ Quality Control Manager
   ___ TQM Consultant
   ___ Other, please specify _____

QUESTIONNAIRE PART B: QUALITY TRAINING ACTIVITIES

Please describe those Quality Training Activities your organization has offered (Past) or intends to offer (Future). For each activity identified as (P) or (F) in Step I, complete Steps II through VI.

STEP I		STEP II	STEP III	STEP IV	STEP V	STEP VI
Identify the quality training activities your organization has offered or intends to offer. These may consist of half-day courses/workshops or a series of courses/workshops. Check the boxes which apply. P - Past or Present F - Future (next 12 months) N/A - Not applicable		**How was the need for this training activity determined?** Select those categories which apply and write the number(s) below. 1. Staff Survey 4. Customer Survey 2. Strategic Plan 5. Management Survey 3. Expert Opinion 6. Other, please specify.	**Who developed or will develop the training activity?** This includes needs analysis, curriculum, goals, training activities, materials etc. Select those which apply and write the number(s) below. 1. Internal Consultants/Trainer 2. External Consultant - Canada 3. External Consultant - U.S. 4. Others, please specify.	**Who delivered or will deliver the training activity?** This includes teaching, leading, facilitation of learning. Select those which apply and write the number(s) below. 1. Internal Consultant/Trainer 2. External Consultant - Canada 3. External Consultant - U.S. 4. Other, please specify.	**Who received or will receive the training activity?** This refers to the target audience for the activity. Select those which apply and write the number(s) below. 1. Executive (CEOs, Boardmembers) 2. Management 3. Employees 4. Other, please specify (i.e., suppliers, consultants, students)	**How was/will the effectiveness of the training activity determined?** Select those which apply and write the number(s) below. 1. Participant evaluation 2. Tests of skill, knowledge, behaviour 3. Evaluation of on-the-job behaviour 4. Measurement of business results (i.e., productivity) 5. None of the above 6. Other, please specify
(Example)	P	5	2	1	1	1
Awareness:	F					
Introduction to Quality Concepts ☐ N/A		1, 4	1, 4 - Line supervisors	2	1	1, 3
Awareness:	P					
Introduction to Quality Concepts, Principles, Strategies ☐ N/A	F					
Orientation:	P					
Presentation of the Organizational Plan for Quality (i.e., Organizational Structure, Roles of Employees) ☐ N/A	F					
Quality Improvement Process:	P					
(i.e., Shewhart Cycle, Problem Solving) ☐ N/A	F					
Data Gathering & Analysis Techniques:	P					
(i.e., Identifying Customers & their Needs, Survey Development & Analysis) ☐ N/A	F					
Team Building:	P					
(i.e., Communication Skills, Team Leadership, Performance Management, Brainstorming) ☐ N/A	F					

QUESTIONNAIRE PART C (OPTIONAL): ADDITIONAL QUALITY TRAINING ACTIVITIES

This section is included so that you can describe other important formal quality training activities that your organization offers or plans to offer. Please list the activities in Step I, then complete Steps II through VI.

STEP I		STEP II	STEP III	STEP IV	STEP V	STEP VI
Identify the quality training activities your organization has offered or intends to offer. These may consist of half-day courses/workshops or a series of courses/workshops. Check the boxes which apply. P - Past or Present F - Future (next 12 months)		**How was the need for this training activity determined?** Select those categories which apply and write the number(s) below. 1. Staff Survey 4. Customer Survey 2. Strategic Plan 5. Management Survey 3. Expert Opinion 6. Other, please specify	**Who developed or will develop the training activity?** This includes needs analysis, curriculum, goals, training activities, materials etc. Select those which apply and write the number(s) below. 1. Internal Consultants/Trainer 2. External Consultant - Canada 3. External Consultant - U.S. 4. Others, please specify	**Who delivered or will deliver the training activity?** This includes teaching, leading, facilitation of learning. Select those which apply and write the number(s) below. 1. Internal Consultant/Trainer 2. External Consultant - Canada 3. External Consultant - U.S. 4. Other, please specify	**Who received or will receive the training activity?** This refers to the target audience for the activity. Select those which apply and write the number(s) below. 1. Executive (CEOs, Boardmembers) 2. Management 3. Employees 4. Other, please specify (i.e., suppliers, consultants, students)	**How was/will the effectiveness of the training activity determined?** Select those which apply and write the number(s) below. 1. Participant evaluation 2. Tests of skill, knowledge, behaviour 3. Evaluation of on-the-job behaviour 4. Measurement of business results (i.e., productivity) 5. None of the above 6. Other, please specify.
(Example) ***Awareness:*** *Introduction to Quality Concepts*	*P*	*5*	*2*	*1*	*1*	*1*
	F	*1, 4*	*1, 4 - Line supervisors*	*2*	*1*	*1, 3*
	P					
	F					
	P					
	F					
	P					
	F					

You are invited to share any insights or comments that arise from your participation in this survey.

Comments: _____

APPENDIX B

TELEPHONE CONTACT

The following is a script to be used to guide the initial telephone contact with the subjects.

> Hello, my name is Melanie Moore. I am surveying organizations in the Edmonton area which have developed or are in the process of developing formal quality training activities for their employees. I got your name from _____. He/she indicated that you were the person responsible for coordinating the quality training activities in your organization. Do I have the right person? [Wait for response. If yes, continue; if no, then ask for the name of the person who is responsible for coordination of quality training]
>
> The purpose of my study is to describe how organizations are managing formal quality training activities. I have developed a Questionnaire in order to collect information on how quality training is being done, i.e. who is responsible for developing it, delivering it, evaluating it. What are the trends in the Edmonton area, with regard to quality training management? The information will be compiled into a research thesis as part of the requirements of a Master's degree in adult education. Your responses would be held in strictest confidence; responses will be incorporated into the larger report so that individual organizations cannot be identified. Would you be interested in participating in this survey? [If yes, or don't know, continue]
>
> You will get the questionnaire in about two or three days. My telephone number will be included, in case you have any questions. I will plan to telephone you in one week to make sure you have received it. May I please have your mailing address?
>
> Thank you for your assistance.

APPENDIX C

COVER LETTER

University of Alberta
Edmonton
Canada T6G 2G5

Adult, Career and Technology Education
Faculty of Education
633 Education South, Telephone (403) 492-3678
Fax (403) 492-0236

April 15, 1992

RE: QUALITY TRAINING SURVEY

Thank you for agreeing to participate in a survey of organizational approaches to formal quality training. The questionnaire is enclosed and should take approximately 20 minutes to complete. You may call me at 466-0970 if you have any questions. Please return the completed questionnaire by April 24, 1992 in the stamped, self-addressed envelope enclosed.

Your responses will be incorporated into a Master's thesis with the results of approximately 30 other questionnaires. The responses given by individual organizations will not be identified in the final report.

Quality training activities represent a significant investment in time and money for your organization. This study will provide valuable information about how quality training activities are being implemented.

Your cooperation is important for the success of this study. However, you or your organization may choose to withdraw from participation at any time. As a token of my appreciation, I am also enclosing a bibliography which lists recent books and articles dealing with quality implementation. I hope that these may be of some use to you.

Sincerely yours,

Melanie Moore

Melanie Moore

CC: Art Deane, Supervising Professor
Enclosure

APPENDIX D

LIST OF PARTICIPATING ORGANIZATIONS

LIST OF PARTICIPATING ORGANIZATIONS

The organizations in the Edmonton area which participated in this study by completing the questionnaires are as follows:

AGT/Telus

Alberta Envirofuels

Alberta Power

Blue Cross

Canada Post

CNR (Canadian National Railways)

Dow Chemical Canada Ltd.

Edmonton Power

Edmonton Telephones

Esso Petroleum Canada

Grant MacEwan Community College

Health & Welfare Canada

IBM Canada Ltd.

Labatts

Misericordia Hospital

Molsons Breweries

Royal Bank

Shell Canada Product Ltd.

Sheritt-Gordon Ltd.

Southam Paragon Graphics

University of Alberta Hospital

Weyerhauser

Xerox